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ART UNIT	PAPER NUMBER
2825	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/916,913	Applicant(s) OHTANI, HISASHI	
	Examiner Lex Malsawma	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/449,140* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10* . 12, 3/5/02
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 29 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the second line of each claim, it is not clear whether "said insulating film" refers to the underlying insulating film as a whole, or to the first insulating film, or to the second insulating film. Examiner interprets "said insulating film" as referring to the first insulating film.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 12-14, 24-26, and 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (6,242,758, **hereinafter** "Yamazaki").

Regarding Claims 12-14:

Yamazaki discloses an organic electroluminescence display device comprising:

a resin substrate 101 (Fig. 1A) comprising polyethylene terephthalate (PET, note col. 3, lines 39-44); and

an insulating film 104 (Fig. 1B) comprising silicon nitride or silicon oxide on the resin substrate (col. 4, lines 3-6). Therefore, these claims are anticipated.

Regarding Claims 24-26 and 30-32:

Yamazaki discloses an organic electroluminescence display device comprising:

a resin substrate 101 (Fig. 1A) comprising PET (col. 3, lines 39-44);

an insulating film 104 (Fig. 1B) comprising silicon nitride or silicon oxide on the resin substrate (col. 4, lines 3-6); and

a channel region of a thin film transistor (TFT) inherently between the source and drain regions that are in physical contact with the source/drain electrodes 108/109 (note in Fig. 1D and col. 4, lines 7-42, the channel region would comprise a portion of amorphous silicon "105" that is located beneath "106"). *Specifically regarding Claims 30-32:* Yamazaki discloses, in example 5 (col. 6, lines 27-47), that the amorphous silicon film 105 is crystallized. Therefore, these claims are anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 15-17, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (6,242,758) in view of Yamazaki et al. (6,218,219, **hereinafter** " '219 Patent") and Zhang et al (6,104,461, **hereinafter** "Zhang").

Regarding Claims 15-17:

Yamazaki discloses an organic electroluminescence display device comprising:

a resin substrate 101 (Fig. 1A) comprising PET (note col. 3, lines 39-44); and

an insulating film 104 (Fig. 1B) comprising a nitride or an oxide on the resin substrate (col. 4, lines 3-6).

Yamazaki **lacks** the insulating film 104 being a multi-layer film comprising a first insulating film (nitride) and a second insulating film (silicon oxide). Note that Yamazaki's insulating film 104 is a gate insulating film (col. 4, line 5). The '219 Patent and Zhang **teach** it was very well known in the art to utilize a multi-layer insulating film for a gate insulating film when forming TFTs, wherein the materials for the multi-layer insulating film comprise silicon nitride, silicon oxide, and silicon oxynitride (note col. 5, lines 53-57 of the '219 Patent; and col. 8, lines 52-54 of Zhang). It would have been an obvious matter of design choice for one of ordinary skill in the art to modify Yamazaki by specifically utilizing a multi-layer insulating film because the '219 Patent and Zhang show/teach that such an utilization was well known wherein incorporating materials such as silicon nitride, silicon oxide, or silicon oxynitride would have further been an obvious matter of design choice.

Regarding Claims 36 and 37:

Yamazaki discloses all limitations of the instant claims except for the insulating film comprising oxy-nitride. However, as stated above, the '219 Patent and Zhang teach it was very well known in the art to utilize an oxy-nitride for a gate insulating film, therefore, the instant claims are held obvious over the cited references with reasons similar to those applied to Claims 15-17 above, i.e., it would have been an obvious design choice modification utilizing a well-known material.

7. Claims 18-23, 27-29, 33-35, and 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (6,242,758) in view of Hamada et al. (6,114,183, **hereinafter** "Hamada")

Regarding Claims 18-20, 38, and 39:

Yamazaki discloses an organic electroluminescence display device comprising:

a resin substrate 101 (Fig. 1A) comprising PET (note col. 3, lines 39-44);

an insulating film **102** (Fig. 1B) comprising an acrylic resin on the resin substrate (col. 4, lines 3-6); and

a TFT formed over the insulating film (note TFT comprising 103-109 in Fig. 1D).

Yamazaki **lacks** the insulating film 102 comprising a nitride selected from a group consisting of silicon nitride and silicon oxy-nitride. However, note that Yamazaki specifies (in col. 3, lines 51-63) the insulating film 102 is an acrylic resin layer that serves to planarize the uneven surface of the PET film (i.e., the PET substrate 101) because PET film surfaces generally have unevenness that greatly affects the electrical properties of a semiconductor layer, i.e.,

Yamazaki specifies that it is important to planarize the base on which a semiconductor layer is to be formed. Hamada **teaches** (note paragraph bridging cols. 6-7) that planarization of a substrate surface can be achieved by utilizing a planarizing insulating 44 comprising a plurality of materials including acrylic resin film, silicon nitride, or silicon nitride oxide (i.e., oxy-nitride). It would have been an obvious matter of design choice for one of ordinary skill in the art to modify Yamazaki by utilizing a "planarizing" insulating film comprising a nitride instead of acrylic resin because Hamada teaches either material (nitride or acrylic resin) can be utilized as a planarizing insulating film. Furthermore, the instant claims are held obvious over the cited references because it has been held to be within the general skill of a worker in the art to select a known material (i.e., to select a nitride instead of acrylic resin) on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding Claims 21-23:

These claims are similar to Claims 18-20 except for a limitation requiring that the insulating film be specifically referred to as an "underlying" insulating film comprising multiple layers, i.e., comprising a first insulating film (silicon nitride or silicon oxy-nitride) and a second insulating film (silicon oxide). Note Yamazaki discloses (in Figs. 1A-1E) the insulating film 102 is an underlying insulating film; and Hamada discloses materials such as silicon nitride, silicon oxy-nitride, or silicon oxide will function as planarizing insulating films. The instant claims are held obvious over the cited references with similar reason applied to Claims 18-20 above, and furthermore, it would have been an obvious matter of design choice to utilize a multi-layer underlying insulating film comprising known materials because one of ordinary skill in the art would have realized that forming a multi-layer insulating film (instead of a single film as

disclosed by Yamazaki) would increase process time and/or complexity, and even after such a realization is made, one could obviously choose to form multi-layers, i.e., one could form three or more insulating films instead of a single film if so desired, however, the important aspect of providing a planarized "base" is disclosed by Yamazaki (who apparently achieves planarization by utilizing a single layer).

Regarding Claims 27-29 and 40-41:

These claims are similar to Claims 21-23 with an additional limitation of an amorphous-silicon channel region of a TFT formed over the underlying insulating film. Note that Yamazaki discloses amorphous silicon films (105, 107) formed over the underlying insulating film 102, wherein the amorphous silicon films are utilized for source/drain regions that will obviously have a channel region between the source and drain regions. Therefore, these claims are held obvious over the cited references with reasoning similar to those applied to Claims 21-23.

Regarding Claims 33-35 and 42-43:

These claims are similar to Claims 27-29 with the only exception being that the channel region of the instant claims comprises crystalline silicon instead of amorphous silicon. Yamazaki discloses, in example 5 (col. 6, lines 27-47), that the amorphous silicon film 105 is crystallized, therefore, the channel region would comprise crystalline silicon. These claims are held obvious over the cited references with reasoning similar to those applied to Claims 27-29.

Remarks

8. Certified copies of the priority documents have been received in Application No. 09/449,140.

9. Applicant's remarks/arguments have been carefully reviewed and in some instances they are persuasive, therefore, the current Office Action contains new grounds of rejections. Applicant's remarks/arguments regarding the specific recitation of "an insulating film comprising a nitride *on* the resin substrate" are not persuasive because of the following reasons. Applicant submits that "the insulating layer in Yamazaki is over, not on the substrate", however, in the broadest interpretation of the word "on", it is clear that the insulating layer of Yamazaki is on the substrate. For example, consider a dining table with a table cloth placed over it; if one brings a plate to the table, it would be understood that the plate is set on the table, even though the table cloth prevents the plate from physically contacting the table surface; therefore, although Yamazaki's insulating layer (104) is not in physical contact with the resin substrate (101), it would be understood that the insulating layer is on the resin substrate. In summary, all pending claims are held obvious over the cited references primarily because Yamazaki (U.S. 6,242,758) discloses an organic electroluminesence display device comprising a PET substrate, wherein the PET substrate allows the display device to be flexible (note col. 1, line 48 to col. 2, line 6). The only significant difference between the current claims and Yamazaki seems to be in the specific choice of materials and possible in the structure for a TFT formed on the PET substrate (i.e., a TFT having a bottom-gate type structure or a top-gate type structure, wherein Yamazaki specifically discloses forming a bottom-gate type structure). With the knowledge generally available to one of ordinary skill in the art, as shown by the numerous references listed currently or previously, utilizing specific materials as currently claimed would have been obvious design choice modifications of Yamazaki.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Murata et al. (5,576,229), Yamazaki (5,877,083), Codama (6,091,196), Takano et al. (6,165,824), and Yamazaki et al. (6,396,105 B1) are cited to show a channel region, of a bottom-gate type TFT, located between source/drain regions; utilizing planarizing insulative materials comprising nitride, oxide, oxy-nitride, or acrylic resin; etc..

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lex Malsawma whose telephone number is 703-306-5986.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lex Malsawma

November 30, 2002

MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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